

Observations on the Distribution of some Aquatic Plants in Guatemala

W. C. MUENSCHER

In the preparation of a flora or catalogue of plants of a region, the aquatic vegetation frequently receives the least consideration. Directly, this incomplete treatment of the distribution and taxonomy of the plants growing in the hydrophytic habitat is explained by the paucity of herbarium specimens available to taxonomists. Indirectly, two other factors undoubtedly contribute considerably to the neglect of this group: first, the assumption that most aquatic plants being rather cosmopolitan in their distribution, collections of these are, therefore, not likely to yield novelties; second, the inaccessibility of the aquatic habitat to the botanical collector not provided with special equipment for collecting in the water frequently results in his not attempting to take any specimens.

During the spring of 1937, while working in Central America, I had an opportunity to observe the distribution of aquatic plants in a number of ponds and streams in Guatemala. In addition to these incidental observations, a day was spent in a boat on each of the three larger lakes, Izabal, at tidewater, Amatitlan, 4000 ft. elevation, and Atitlan, 5000 ft. elevation above sea-level.

Assistance in the determination of plants has been received from the following: Dr. Wm. R. Maxon, Pteridophytes; Mrs. Agnes Chase, grasses; Dr. R. T. Clausen, *Najas*; Dr. H. K. Svensen, *Eleocharis*; Dr. Paul Standley, miscellaneous specimens. To these taxonomists and also to Mr. George W. Perkins, Mr. E. J. LeGarde and Col. Victor E. Ruehl, who facilitated my travels in Guatemala, I express my sincere thanks. The herbarium specimens cited are deposited in the herbarium of Cornell University.

ANNOTATED LIST OF SOME AQUATIC PLANTS OF GUATEMALA

(Based upon observations and collections made by W. C. Muenscher, April 8—May 23, 1937)

SALVINIACEAE

Salvinia rotundifolia Willd.

Floating in stagnant backwaters of streams; also in ponds between Puerto Barrios and Quirigua. Rio Dulce, 12180.

Azolla filiculoides Lam.

In sloughs, sluggish streams, and shallow bays in lakes. Lake Atitlan, 12178, 12179; Lake Amatitlan, 12177; near Zacapa.

MARSILIACEAE

Marsilia sp.

Sterile plants in shallow water and on sandy shore of a spring-fed pond at 8000 ft. elevation. Quiché, 12181.

EQUISETACEAE

Equisetum giganteum L.

In shallow water and marshes along streams, at 7000 ft. elevation on Vulcan Santa Maria, 12183; Rio Coban, Tactic, 12182.

TYPHACEAE

Typha truxillensis HBK.

Locally abundant in shallow water and marshes bordering lakes and streams. Lake Amatitlan, 12617; Lake Izabal; Puerto Barrios; Rio Polochic, near Pancajche.

NAJADACEAE

Najas guadalupensis (Spreng.) Magnus.

In the larger lakes, in water to a depth of ten feet. Lake Amatitlan, 12001, 12002, 12003; Lake Atitlan, 12004.

Najas guadalupensis Morong. var. *curassavica* (A. Br.) Magnus and Rendle.

In a spring-fed pond at 8000 ft. elevation. Quiché, 12006.

POTAMOGETONACEAE

Potamogeton fragillimus Hagstr.

In shallow bays of Lake Atitlan, 12066, 12068, 12069, 12070, 12077.

Potamogeton foliosus Raf. var. *genuinus* Fernald.

In shallow ponds and lakes. San Felipe, Lake Izabal, 12074; Finca Moca, 12075.

Potamogeton gramineus L. var. *graminifolius* Fries.

Frequent in shallow bays of Lake Izabal, about the islands in the Golfete and in the Rio Dulce. Lake Izabal, 12078, 12081; Golfete, 12083, 12084; Rio Dulce, 12082.

Potamogeton nodosus Poir.

Local in the Golfete and Rio Dulce. Rio Dulce, 12080, 12085.

Potamogeton pusillus L.

Shallow lakes and sluggish streams. In spring-fed pond, 8000 ft. elevation, Quiché, 12005; Lake Atitlan, 12069; Rio Dulce, 12086, 12079.

Ruppia maritima L.

Abundant in the Rio Dulce; local in Lake Atitlan. Rio Dulce, 12072a, 12624; Lake Atitlan, 12067, 12071, 12076.

ALISMACEAE

Echinodorus macrophyllus (Kunth.) Micheli.

In shallow water, sloughs and marshes along the Rio Motagua and Rio Dulce. Quirigua, 12065.

Sagittaria lancifolia L.

In shallow water and marshes along the Rio Polochic, Rio Dulce, Rio Motagua and Golfete. Panzos, 12060.

HYDROCHARITACEAE

Thalassia testudinum Koenig and Sims.

Common in salt water along the coast between Puerto Barrios and Livingston. Puerto Barrios, 12063.

Vallisneria americana Michx.

In shallow bays of Lake Izabal, Golfete and Rio Dulce. Estor, Lake Izabal, 12621; Rio Dulce, 12620.

GRAMINEAE

Panicum paludivagum Hitchc. and Chase.

In shallow water; the spreading rhizomes sometimes form dense mats in stagnant bays and sluggish streams. Lake Amatitlan, 12214; Panzos, Rio Polochic; Rio Dulce.

Paspalum virgatum L.

In brackish marshes, Puerto Barrios, 12232.

Phragmites communis L.

In shallow water and marshes along the shore of Lake Amatitlan and Golfete.

CYPERACEAE

Cyperus canus Presl.

In swamps along shore of Lake Amatitlan, 12052.

Cyperus giganteus Vahl.

In sloughs and swamps between Puerto Barrios and Bananero.

Cyperus Humboldtianus Steud.

Wet shores of streams and ponds. Finca Moca, 12039; Rio Lima, 12032a.

Cyperus Luzulae (L.) Retz.

In swamps and borders of streams. Panzos, 12570.

Eleocharis retroflexa (Poir.) Urban.

In shallow water and wet borders of streams and lakes. Lake Atitlan, 12028; springy bank by waterfall, 7000 ft. elevation, Vulcan Santa Maria, 12044.

Eleocharis caribaea (Rottb.) Blake.

In warm water by edge of hot spring on shore of Lake Amatitlan, 12050.

Eleocharis filiculmis Kunth.

In shallow water and marshes bordering streams and lakes. Rio Coban, Tactic, 12025; Finca Moca, 12037.

Eleocharis geniculata (L.) R. & S.

Along borders of lakes, ponds and streams. Lake Atitlan, 12056; Finca Moca, 12036; Rio Coban, Tactic, 12026.

Eleocharis interstincta (Vahl.) R. & S.

In shallow water, Lake Amatitlan, 12055.

Fimbristylis miliacea (L.) Vahl.

In lowland marshes and on wet shores. Rio Lima, 12032; Puerto Barrios, 12015.

Mariscus jamaicensis (Crantz) Britton.

In shallow water along the Golfete and Rio Dulce. Rio Dulce, 12019.

Scirpus californicus (Mey.) Britton.

Local in shallow bays of lakes and Rio Dulce; abundant about the islands in the Golfete. Lake Amatitlan, 12053, 12054; Rio Dulce, 12018.

Scirpus cubensis Pers.

In shallow water along shore of Rio Dulce and Golfete. Rio Dulce, 12020.

Scleria microcarpa Nees.

In marshes along Rio Polochic, Rio Dulce and the Golfete. Panzos, 12023.

Scleria latifolia Sw.

Along shore of Golfete and in swamps between Puerto Barrios and Tenedores. Golfete, 12023a.

ARACEAE

Pistia stratiotes L.

The floating rosettes of spongy leaves form dense mats over the surface of quiet water in ponds and streams. San Felipe, Lake Izabal, 12618; Rio Dulce; Rio Lampara; "Section 4" between Puerto Barrios and Tenedores.

PONTEDERIACEAE

Heteranthera reniformis Ruiz, & Pav.

In shallow water and along muddy flats of lakes, ponds and streams. Lake Amatitlan, 12615; Coban, 12613; Puerto Barrios, 12614.

Pontederia cordata L. (*P. rotundifolia*)

In shallow water and marshy shores of lakes and sluggish streams. Rio Polochic, Panzos, 12622; Rio Dulce, 12623; Lake Izabal; Golfete; ponds near Tenedores.

JUNCACEAE

Juncus effusus L.

In shallow pond and bordering marsh, Coban, 12043.

Juncus marginatus Rostk.

In swamps, Rio Coban, Tactic, 12024.

AMARYLLIDACEAE

Hymenocallis littoralis (Jacq.) Salisb.

In shallow water along the borders of mangrove swamps along the east end of the Golfete and shores of the Rio Dulce, 12061.

CERATOPHYLLACEAE

Ceratophyllum demersum L.

Widely distributed in shallow water. Lake Atitlan, 12608; San Felipe, Lake Izabal, 12609; Rio Dulce, 12610.

NYMPHAEACEAE

Cabomba aquatica Aubl.

In shallow bays of lakes and streams. Lake Izabal, 12611; Rio Dulce, 12612; Golfete.

Nymphaea ampla (Salisb.) DC.

Infrequent in shallow bays and sluggish streams. Rio Dulce, near mouth of Rio Lampara, 12619; pond near northwest corner of Lake Amatitlan.

CRUCIFERAE

Nasturtium officinale R. Br.

In small streams in the mountains at 10,000 ft. elevation. Mount Maria Tecum, 12047.

RHIZOPHORACEAE

Rhizophora Mangle L.

Medium-sized trees with prop-roots in soft mud on tidal flats, Rio Dulce and Golfete. Rio Dulce, 12017.

ONAGRACEAE

Jussiaea peruviana L.

In shallow water and on marshy banks of streams. Rio Siguacan, 12029.

Jussiaea repens L.

In shallow water in lakes and sluggish streams. Lake Atitlan, 12059.

Jussiaea suffruticosa L.

In shallow water and marshes bordering on lakes and streams. Lake Atitlan, 12058; Pancajche, 12558.

UMBELLIFERAE

Hydrocotyle mexicana Cham. and Schlecht.

Wet banks of streams. Coban, 12027; Finca Helvetia, Esquintla, 12045.

Hydrocotyle umbellata L.

In shallow water and on sandy shores of lakes and ponds. Finca Moca, 12038; Lake Atitlan, 12057.

PODOSTEMACEAE

Maranthrum foeniculaceum H. & B.

On boulders in swift streams on the Pacific slope. Rio Lima, 12034, 12035.

Maranthrum Schiedeanum Cham.

On boulders in swift streams on the Pacific slope. Rio Siguacan, 12031.

Tristicha hypnoides (St. Hil.) Spreng.

On boulders in swift streams, usually associated with the two preceding species. Rio Lima, 12033; Rio Siguacan, 12030.

LENTIBULARIACEAE

Utricularia obtusa Sw.

In sluggish backwaters, Rio Dulce, 12616.

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